

designed to remove only a variable percentage of fruit and/or shoots. Furthermore, the Olmo et al. patent teaches away from modifying it in any way into a thinner. In column 4, lines 3-24 describe the method and purpose of shoot or fruit thinning. While it contemplates thinning as a part of the viticulture process, it makes no suggestion that the disclosed invention may be adapted to take part in this process. Furthermore, in column 6, lines 16-24, the disclosure describes how the invention detaches wires from the trellis system, thereby disassembling the support structure for the vines. It states that this is done in order to prepare the vineyard for the next growing season. Such disassembly of the trellis system is harmful to the vines and destroys substantially all of the well organized structure of the trellis system. This action strongly teaches away from use of the present invention for the thinning process which is done in the early and middle parts of the growing season.

Those skilled in the art will appreciate that in addition to the Olmo et al. patent disclosing the device that is unsuitable for thinning, the art would teach away from combining it with the rake system disclosed by Pellenc. The Pellenc raking system is designed to rake debris such as discarded branches, foliage and fruit into long rows that may later be collected. If such a rake were attached to the Olmo et al. device, it would result in raking and damaging the fruit harvested which lays upon the ground according to the Olmo patent.

Additionally, the Pellenc system describes rotary tools horizontal and very close to, if not in contact with, the ground that is being raked. Nothing in the patent suggests that these raking tools may be turned 90° and applied to a vine to thin fruit or shoots. While it may be foreseeable to attach a raking system to rake debris from a shoot and fruit thinner, such as the one disclosed in the present invention, there is nothing in the prior art that suggests that a rake device may be altered and attached to a harvester to form an adequate shoot and fruit thinner.

For the above reasons, Applicant respectfully believes that the prior art cited does not render the present invention obvious. However, to further distinguish the present invention, independent Claim 1 has been modified to include another distinguishing feature of the present invention. Those skilled in the art will appreciate that cordons between trellis support devices may sag somewhat. Further, application of the thinning device causes the cordon to vibrate. Therefore, the cordon being thinned is constantly changing positions. Those skilled in the art will appreciate that thinning is generally done at specific heights and regions of the vine canopy. Because the cordon is moving up and down constantly, portions of the canopy will be overly thinned while other portions will not be thinned enough. To overcome this, the present invention discloses the use of a guide wheel. The guide wheel, claimed in Claim 1, rides along the top of the cordon. It is attached to the frame such that as the guide wheel moves up and down, the thinning tool similarly moves upwardly and downwardly. This insures that in spite of motion of the cordon, the thinning process remains constant. This provides extremely efficient and extremely accurate shoot and fruit thinning. Those skilled in the art will appreciate that this is an improvement over the prior art. Those skilled in the art will also appreciate that an obvious alternative to using a guide wheel is to use an optical sensing beam. Other methods may also be used, but a guide wheel is generally considered the simplest, and therefore most practical.

The Examiner has also rejected Claims 4 and 15 as being unpatentable over Olmo et al. in view of Pellenc and further in view of Mead et al. (U.S. Patent No. 4,383,400). Mead et al. discloses a device having a series of brushes designed to position grape vine shoots. Those skilled in the art will appreciate that positioning shoot is a relatively gentle process and these brushes must be flexible and move slowly to avoiding damages shoots. Applicant respectfully believes that these brushes

may be distinguished from those of the present invention. The brushes of the present invention are designed to be inserted in the gap between cordons of a double trellis system. Shoots and fruit in this region generally receive less sunshine than shoots and fruit on the outside of the trellis system. Therefore, they generally produce inferior fruit and are undesirable. In the present invention, a high speed brush rotating at about 100 rpm or greater is inserted into the gap in order to literally rip fruit and shoots apart in this region. Those skilled in the art will appreciate that this allows the vines to allocate more of their energy towards producing superior fruit located on the outside of the trellis system. While the patent to Mead et al. is designed to gently position shoots on a single cordon system, it is neither designed nor intended to remove and/or destroy undesired shoots and fruit. The present invention, on the other hand, provides a rapidly rotating brush for removing undesirable fruits only from inside the trellis system. Accordingly, Claims 4 and 15 have been reworded in order to clarify this.

The Examiner has also taken note regarding Claims 5 and 16 that it is old and notoriously well-known in the art to drive farm machinery using a chain drive. Applicant agrees. Although Applicant believes Claims 5 and 16 to now be in condition for allowance, as they depend from modified and clarified independent claims, Applicant desires to further clarify the distinction between the prior art and Claims 5 and 16. The novelty disclosed in these claims lies not in the chain drive, but the oval shape of the tool. This tool has been specifically designed in order to facilitate pruning of shoot and fruits underneath the cordon and on the side of the cordon opposite of the machinery being used. As a rotary tool moves closer to a cordon, an increasingly broad region of the canopy is pruned. This results in excessive pruning when the devices are used underneath and in other hard to reach portions of the canopy. The oval shape of the claimed devices allows them

to penetrate deeper into regions of the canopy without broadening the area being thinned. This prevents desirable fruit and shoots being removed along with undesirable shoots and fruit.

For all the foregoing reasons, Applicant believes that the application is in condition for allowance and such action is earnestly solicited. If further issues remain, a telephone conference with the Examiner is requested.

Respectfully submitted,



Allen F. Bennett
Registration No. 50,199
Head, Johnson & Kachigian
228 West 17th Place
Tulsa, Oklahoma 74119
(918) 587-2000
Attorneys for Applicant

Date: November 11, 2002